DESCRIPTION OF HAEMAGOGUS AERITINCTUS, A NEW SPECIES FROM BRITISH HONDURAS, WITH A NOTE ON THE VALIDITY OF HAEMAGOGUS LUCIFER (H. D. AND K.)

(DIPTERA: CULICIDAE)

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In 1955, while conducting investigations on the ecology of yellow fever in Middle America, the authors visited British Honduras for several days. The specific objective of this trip was to investigate the mosquito fauna of the area in relation to the possible transmission of yellow fever virus. At the time, there was an outbreak of jungle yellow fever moving west along the north coast of Honduras toward the east coast of Guatemala and British Honduras. We arrived at Belize several days after a devastating hurricane had passed through that territory, so that conditions were not favorable for the capture of adult mosquitoes. Therefore, efforts were concentrated on the finding of larvae in tree-holes within a variety of ecological situations. Collections were made in the vicinity of Belize and of Stann Creek, as well as at several points along the road between these two towns.

The present report deals with descriptions of the adult, male terminalia, pupa and larva of a new species of *Haemagogus* found breeding in mangrove associations at two localities. A discussion is also included of the taxonomic relationships between the new species and related forms. From the evidence presented the authors conclude that *Haemagogus lucifer* (Howard, Dyar and Knab, 1912) is a valid species and not a synonym of *H. regalis* Dyar and Knab, 1906 as proposed by Komp (1954).

Haemagogus (Haemagogus) aeritinctus, n. sp.

MALE.—*Head.* Proboscis somewhat longer than the fore femur, uniformly purple in color. Palpi very short, barely longer than the clypeus, clothed with purple scales. Clypeus naked, shiny black in color. Antennae about half as long as the proboscis, sparsely plumose; tori dark, bare. Vertex blue-scaled with a very narrow line of silvery scales bordering the eyes. Occiput clothed with flat, broad, straw-colored scales. Mentum light-scaled.

Thorax. Anterior pronotal lobes large, inner angle clothed with silvery scales, remainder of lobe blue-scaled. Mesonotum black, clothed with bright coppery scales which give a purplish reflection under oblique illumination, except for a small spot of blue-green scales above the roots of the wings. Scutellum with a mixture of blue-green and coppery scales. Pleuron mostly covered with bright silvery scales except for posterior pronotal lobe and meron which are bare and shiny black. Pleural chaetotaxy as follows: no propleurals, two or three black

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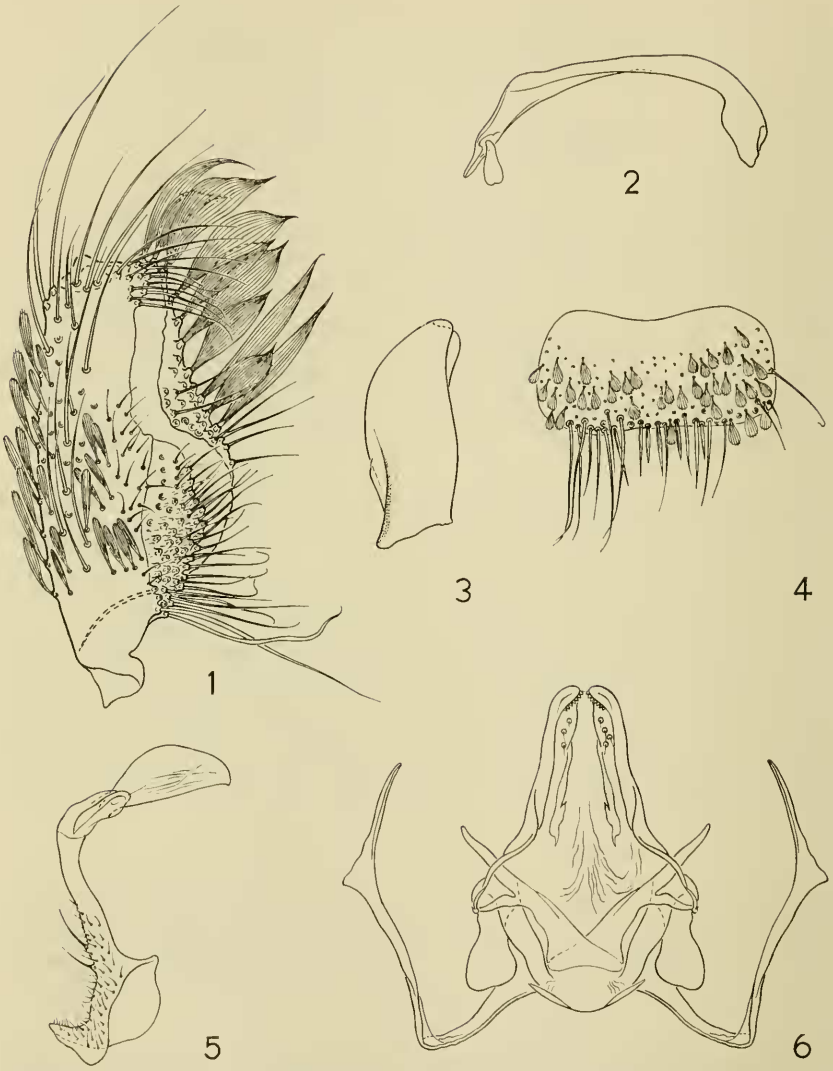


Male terminalia of *Haemagogus aeritinctus* n. sp. Fig. 1, Basistyle; fig. 2, Dististyle; fig. 3, Mesosome; fig. 4, Eighth tergite; fig. 5, Claspette; fig. 6, Tenth sternite.

setae on posterior pronotum, no post-spiraculars, no sternopleurals, two yellowish pre-alars, three or four upper mesepimerals. Postnotum with one seta near its posterior border. Coxae and trochanters yellowish with a patch of silvery scales. Femora clothed with purplish scales, base and undersides largely pale-scaled; hind femur also bearing a long patch of silvery scales on its anterior surface.

Tibiae and tarsi covered with purple scales; tarsal claw formula 1.1–1.1–0.0. Wings shorter than the abdomen; cell-R_2 much longer than its petiole. Halter with pale base and dark knob, tip silvery-scaled.

Abdomen. Abdominal tergites clothed with purple scales and large basal segmental patches of silvery scales which become progressively smaller apically.

Male terminalia. Eighth tergite (Fig. 4) bearing 42 large setae from outstanding sclerotized bases in irregular rows which are at most three setae deep. The setae of the posterior row appear to be very narrow, striated, modified scales and are flanked by three or four of the longest setae of the sclerite.

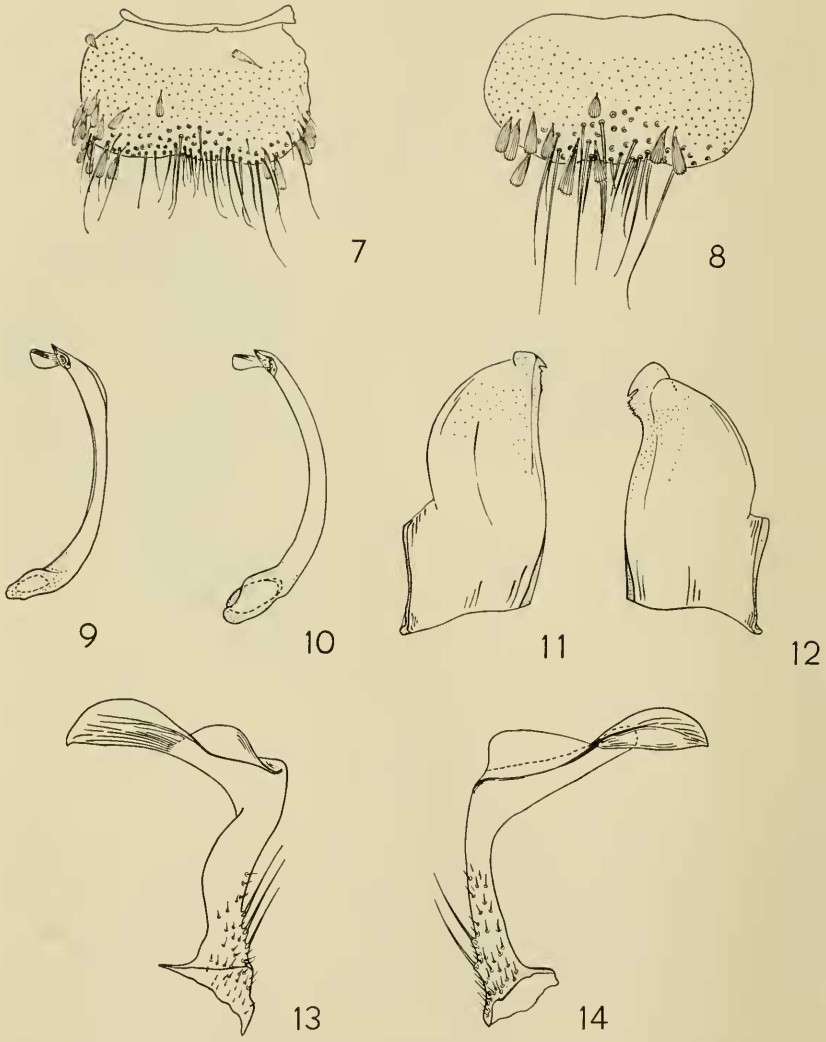
Basistyle as figured (Fig. 1). Dististyle (Fig. 2) about two-thirds the length of the basistyle, expanded on distal third then tapering sharply to a rather acute point, giving the appearance of a narrow snout; appendage of the dististyle inserted subapically, expanded distally, tongue-like. Stem of claspette (Fig. 5) rather narrow, slightly sinuate, bent sharply at right angles on distal third, clothed with sparse short pile on proximal half and bearing two stout setae from prominent insertions on its inner surface near the base. Filament a flat, widely expanded leaf inserted distally on the stem. Other parts as illustrated in figures.

FEMALE.—Coloration as for the male; proboscis slightly shorter; tarsal claws unarmed.

LARVA.—*Head* (Fig. 18). Globose, dark. Antennae glabrous, small, barely exceeding the anterior border of head; antennal hair single, short, inconspicuous, inserted slightly beyond the middle of antennae. Head chaetotaxy as figured.

Thorax. Skin glabrous. Chaetotaxy as follows: *Prothoracic hairs*: Nos. 1, 2, 3 inserted in the same chitinized plate; No. 1 long, with 2–5 branches; No. 2 about equal to No. 1, single; No. 3 as long as No. 1, 4–8 branched; No. 4 slightly shorter than No. 1 with 3–7 branches; Nos. 5 and 6 equal in size, with coalescing sclerotized bases, longer than No. 1; No. 7 of same size as Nos. 5 and 6, 3–4 branched; No. 8 slightly more than half as long as No. 4, with 3–8 branches; Nos. 9, 10, 11 and 12 inserted in same sclerotized tubercle, Nos. 9 and 11 always single; No. 10 with 1–5 branches; No. 12 single or double. *Mesothoracic hairs*: No. 1 with 2–8 branches; No. 2 slightly more than half as long as No. 1, single; No. 3 single, longer than No. 2; No. 4 about equal to No. 3, single; No. 5 single or double; Nos. 6 and 7 inserted on one sclerotized plate, both about equal to No. 5 in length; No. 6 with 4–8 branches; No. 7 single; No. 8 5–9 branched; Nos. 9, 10, 11 and 12 inserted on same sclerotized base, No. 9 single as long as No. 8; No. 10 6–8 branched; No. 11 single; No. 12 shorter than No. 4 with 1–3 branches; No. 13 multiple, about equal to No. 8; No. 14 with 3–7 branches. *Metathoracic hairs*: No. 1 3–7 branched; No. 2 longer than No. 1, single; No. 3 shorter than No. 2, 2–6 branched; No. 4 with 1–3 branches, shorter than No. 1; No. 5 about equal to No. 4 with 2–6 branches; No. 6 single, as long as No. 2; No. 7 a multiple tuft; No. 8 about as long as No. 5, multiple; Nos. 9, 10, 11, 12 inserted on same sclerotized base; No. 9 single, No. 10 a multiple tuft, No. 11 single, No. 12 3-branched.

Abdomen. Skin glabrous. Chaetotaxy as follows: Hair No. 6 with 3–5 branches on segments I and II, double or rarely triple on segments III to VI, single on segment VII; hair No. 7 single, or rarely double on segment I. Subdorsal hairs very variable, usually with 3–4 branches. Comb-scales 20 to 38 in number, arranged in a patch 3 rows deep. Terminal segments as figured (Figs. 15, 16 and 17).



Male terminalia parts of *Haemagogus lucifer* and *H. regalis*. Fig. 7, *H. lucifer*: 8th tergite; fig. 8, *H. regalis*: 8th tergite; fig. 9, *H. lucifer*: Dististyle; fig. 10, *H. regalis*: Dististyle; fig. 11, *H. lucifer*: Mesosome; fig. 12, *H. regalis*: Mesosome; fig. 13, *H. lucifer*: Claspette; fig. 14, *H. regalis*: Claspette.

PUPA.—Trumpets short and stumpy, diameter of pinna about twice the length of the meatus; tracheoid small, about ⅓ as long as meatus. Abdominal chaetotaxy as figured (Fig. 19). Rudimentary spiracles on segments II–VII quite prominent and located laterally on the segments.

Type Material

Holotype: Male, mounted on card point. Associated larval and pupal skins mounted on a slide. Terminalia stained, dissected and mounted on a second slide. Reared from larvae collected in a rot-hole of a red mangrove tree (*Rhizophora mangle*), in the vicinity of Stann Creek, British Honduras, on 5 October, 1955. P. Galindo and H. Trapido, collectors.

Allotype: Female, mounted on card point. Associated larval and pupal skins mounted on a slide. Same collecting data as holotype.

Paratypes: Two males mounted on card-points. Associated larval and pupal skins and terminalia mounted on separate slides. Same collecting data as holotype.

One male mounted on a card-point. Associated larval and pupal skins and terminalia mounted on separate slides. Reared from larvae taken in a rot-hole of a *Ficus* tree at the fringe of a mangrove swamp, near Belize, British Honduras, on 5 October, 1955. P. Galindo and H. Trapido, collectors.

Eight males mounted on card points. Associated pupal skins and terminalia mounted on separate slides. Reared from pupae. Seven specimens with same collecting data as holotype, one taken at Belize, same collecting data as paratype above.

Seven males mounted on card-points. Two with terminalia mounted on slides. Four with same collecting data as holotype, and three from Belize.

Four females mounted on card-points. Associated larval and pupal skins on slides. Same collecting data as holotype. Twelve females, nine from type locality and three from Belize, mounted on card-points with associated pupal skins mounted on slides.

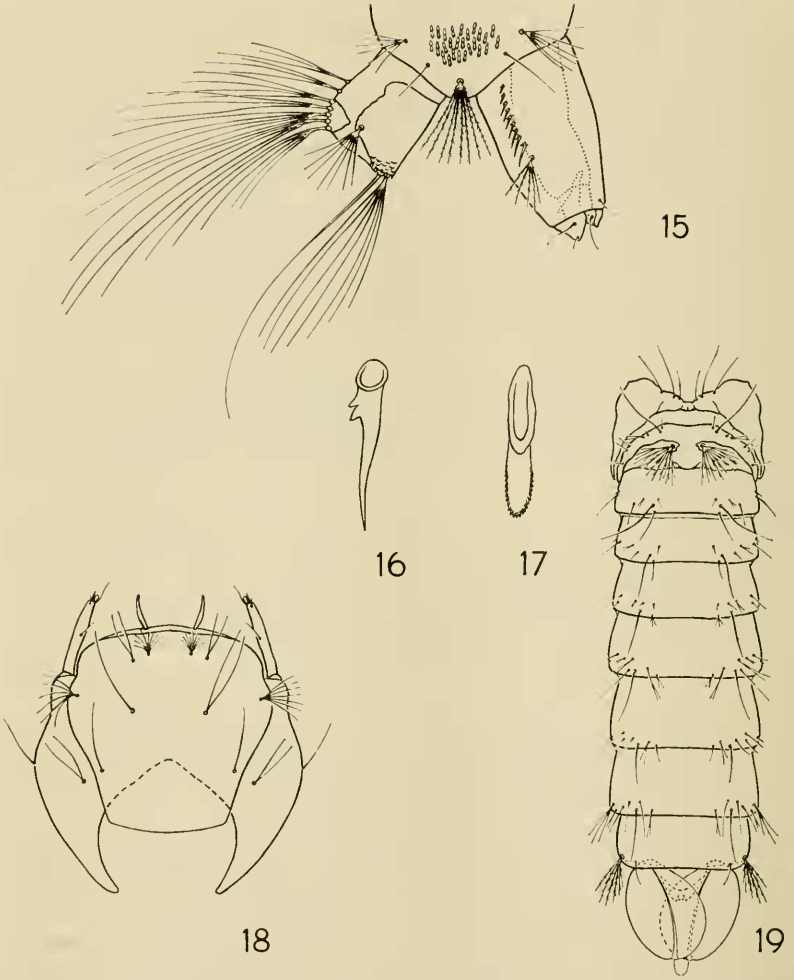
Four females mounted on card-points taken while attempting to bite in a mangrove swamp near Belize, B. H., on October, 1955. P. Galindo and H. Trapido, collectors.

Ten larval skins, eight from the type locality and two from Belize, mounted on slides.

Disposition of type material. Holotype and allotype to be deposited in the U.S. National Museum. Paratype series to be divided between the U.S. National Museum and the mosquito collections of the University of California at Los Angeles (U.C.L.A.) and of Gorgas Memorial Laboratory, Panama.

Taxonomic discussion. This new species belongs to the group of Middle American species of *Haemagogus* sens. str. which are commonly found breeding in mangrove swamps. These species are: *regalis* D. and K., *lucifer* H. D. and K., *iridicolor* Dyar, *chalcospilans* Dyar and *boshelli* Osorno.

The peculiar coppery sheen of the mesonotal scales in *aeritinctus* n.



Immature stages of *Haemagogus aeritinctus* n. sp. Fig. 15, Terminal segments of larva; fig. 16, Individual pecten tooth; fig. 17, Individual scale of comb of 8th segment; fig. 18, Head capsule of larva, fig. 19, Abdominal chaetotaxy of pupal skin.

sp., differentiates it from all other species of *Haemagogus*, with the exception of *uriartei* Shannon and Del Ponte, which occurs in meridional South America and belongs to a different subgenus. The yellowish color of the coxae of *aeritinctus* is shared only by *H. chalcospilans*, from which *aeritinctus* may be separated by the color of the mesonotal scales, the longer proboscis and the shape of the dististyle

and claspettes of the male terminalia. The male terminalia of *aeritinctus* shares characters with both *regalis* and *lucifer*. The shape of the dististyle is like the latter species while the claspettes and mesosome are much as in *regalis*. However, the three species may be separated by the number of setae with sclerotized insertions on the eighth tergite. In *aeritinctus* they range from 33 to 46 (in 20 specimens) with a mean of 40.9; in *regalis* from 46–85 (in 59 specimens) with a mean of 64.5, and in *lucifer* from 62–104 (in 78 specimens) with a mean of 85.8.

Komp (loc. cit.) sank *H. lucifer* (H. D. and K., 1912) a mosquito described from Panama, in the synonymy of *H. regalis* D. and K., 1906 with type locality in Sonsonate, El Salvador, stating: "The writer has examined the male terminalia of *H. lucifer* on slide No. 1461 in the U.S. National Museum collection, which was made from a male of the type series . . . and finds that the terminalia of this specimen correspond in all particulars with the male terminalia on three slides . . . which are from the type series of *H. regalis*. The writer has many specimens of '*H. lucifer*' from Panama, of which he has dissected and mounted the male terminalia. These agree with those of the three slides of the type series of *H. regalis, noted above*." In further support of his case, Komp (loc. cit.) published four photomicrographs of the terminalia slides of *H. lucifer* and *H. regalis* discussed above, pointing out the apparent similarity of the different parts in these preparations.

The authors have been fortunate in working with fresh material of *H. regalis* from El Salvador, Guatemala and Mexico, as well as with a long series of *H. lucifer* from various parts of Panama and Colombia and find these two taxons to differ in the following respects:

a). The shape of the dististyle. In *H. lucifer* (Fig. 9) it swells beyond the middle and then tapers to a sharp point, appearing narrowly snout-shaped. In *H. regalis* (Fig. 10) there is no appreciable swelling in the dististyle which is arcuate and tapers gradually and very slightly from base to apex. This character can be appreciated in the photomicrograph of the terminalia of *H. lucifer* published by Komp (loc. cit.) but cannot be clearly distinguished in the photomicrograph of *H. regalis*, due to the orientation of the specimen. However, one of us (P.G.), has examined all the slides of the type series of *H. regalis* in the U.S. National Museum, and finds that, with the exception of the holotype, they all appear to agree well in this characteristic with the fresh material in the authors' collection, despite the fact that they are rather poor preparations. The holotype lacks both dististyles so it could not be studied properly.

b). The mesosome of *H. regalis* (Fig. 12) has a rather prominent subapical serrated carina along the ventral surface. In *H. lucifer* (Fig. 11) this carina is always missing although some slight serrations are sometimes present just below the apex. This character can only be

seen in preparations where the mesosome has been dissected out and mounted in lateral view.

c). In *H. lucifer* (Fig. 13) the stem of the claspette swells medianly, thus appearing much stouter than in *H. regalis* (Fig. 14) which has slender and slightly sinuate claspette stems. This characteristic is extremely constant and can be seen in Komp's photomicrographs, but the difference was thought by him to be due to distortions during the preparation of the slides which are in poor condition.

d). Both forms have thick, stiff setae inserted in sclerotized bases on the distal margin of the eighth tergite, but the mean number of these setae differs. In 59 specimens of *H. regalis* (Fig. 8) the number of setae range from 46 to 85 with a mean of 64.5. In 78 specimens of *H. lucifer* (Fig. 7) the number of thick setae on the eighth tergite range from 62 to 104 with a mean of 85.8.

e). These two forms occupy widely different geographical areas. *H. lucifer* is known from Colombia, Panama and southeastern Costa Rica and is replaced in Costa Rica along both coasts by *H. iridicolor*, which extends into Nicaragua. *H. regalis*, on the other hand, occurs from the Pacific coast of Mexico in the state of Chiapas, south to the Gulf of Fonseca in the border area between El Salvador and Honduras. On the Atlantic coast it has been found only in the states of Veracruz and Tabasco in southern Mexico, being replaced to the south in British Honduras and Guatemala by the new species *H. aeritinctus*. The latter is in turn isolated from contact with *H. lucifer* by *H. iridicolor* which occupies all of the Atlantic littoral of Nicaragua and Costa Rica.

About a year after his publication, the late W. H. W. Komp in a letter to the authors, stated: "I am now inclined to believe that *lucifer* is a subspecies of the more northerly occurring *regalis*." However, in view of the evidence presented above we see no reason at present to treat these two forms as only subspecifically distinct and therefore consider them as distinct species.

Geographical distribution. Haemagogus aeritinctus is known only from Belize and Stann Creek, British Honduras, and from the east coast of Guatemala.

Altitudinal distribution. Sea-level.

Ecology. The authors have taken this species in mangrove swamp at Stann Creek, and among *Ficus* trees adjacent to mangrove at the outskirts of Belize. Larvae were extremely abundant in rot holes in the mangrove and *Ficus*, but adults attacking man were scarce. The scarcity of adults is probably not significant as the collecting was done only several days after a devastating hurricane in the area. The adults which approached attacked about the head. Careful search of the coastal mangrove of northern Honduras on several occasions failed to

reveal any *Haemagogus* there. We also made one search of the mangrove near Chetumal, Quintana Roo, Mexico, just north of British Honduras, but did not find *Haemagogus*. Dr. Jorge Boshell (personal communication) collected the new species along the east coast of Guatemala just north of Puerto Barrios. He captured adults attempting to bite in mangrove swamps and recognized the species on sight by the coppery sheen of the mesonotum, the yellowish coxae and the habit of females of attacking man about the head. It appears that this is a species of restricted range. It is morphologically close to, and the ecological equivalent of the littoral species *H. regalis*.

Relation to yellow fever. Nothing is known, but probably not of significance in the epidemiology of sylvan yellow fever because of its restricted littoral range and habitat. The species is in part peridomestic however, and appears to be abundant at Belize. Thus it might conceivably become involved in the transmission of yellow fever from man to man if the disease were once introduced.

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References

Komp, W. H. W. 1954. *Haemagogus lucifer* H. D. and K., 1912, a synonym of *Haemagogus regalis* D. & K., 1906. Proc. Ent. Soc. Wash. 56: 193–195.

A NEW MEMBER OF A SIBLING SET BELONGING TO THE DROSOPHILA TRIPUNCTATA GROUP
(Diptera: Drosophilidae)

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Drosophila leticiae Pipkin, n. sp.

External characters of imagines: ♂ ♀, Arista with 6 or 7 dorsal and 3 ventral branches in addition to terminal fork. Front dull yellowish brown, darker in ocellar triangle; ocelli pink; 7 inconspicuous frontal hairs on each side apex of frontal triangle; orbital hairs 5 or 6. Proclinate orbital ⅘ posterior reclinate; anterior reclinate thin, about ¼ proclinate. Face, ♂, white; ♀, yellowish. Carina broad, flat, widening distally; white in male; yellowish brown in female. One prominent oral bristle; proboscis yellowish, shining, darker distally, with yellowish hairs. Cheek yellowish, absent behind; width from base of oral bristle to eye border 1/12 greatest diameter of eye. Orbits yellowish brown. Eye dull red, a little darker in the dorsal ⅕; pile straw-colored. Eye index 1.2. Palpi yellow, with one prominent subapical hair, 2 others on lateral margin of palpus in addition to small hairs. Acrostichal hairs in 6 rows; mesonotum shining brown; pleura shin-